

BOEM ENVIRONMENTAL STUDIES PROGRAM: Ongoing Study

Region: Pacific

Planning Area(s): All

Title: Understanding the Role of Offshore Structures in Managing Potential *Watersipora subtorquata* Invasions (PC-13-04)

BOEM Information Need(s) to be Addressed: The purpose of this study is to describe the distribution, abundance and life history of the bryozoan *Watersipora subtorquata*, which is a non-indigenous species (NIS) known to exist on offshore oil and gas platforms and has the potential to negatively affect native biological communities. Using these ecological data, this study will assess the effectiveness of potential mitigation measures to prevent further colonization on uninhabited substrate. The need for this information is to elucidate the role that offshore artificial structures may have in affecting biological communities and to comply with the duties of federal agencies that are outlined in Section 2 of Executive Order (EO) 13112 (Invasive Species). BOEM will use study results for environmental reviews concerning existing operations and decommissioning alternatives of offshore platforms and potential marine renewable energy facilities.

Total BOEM Cost: \$500,000 **Period of Performance:** FY 2013-2016

Conducting Organization: University of California, Santa Barbara

Principal Investigator: Mark Page

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Description:

Background: Artificial substrate in the marine environment may facilitate the establishment and spread of NIS by providing novel habitats where native species fail to have a competitive advantage over recent arrivals. Some of these NIS may subsequently invade natural habitats and displace or change native biological communities. In southern California, biologists documented the first appearance of the non-indigenous bryozoan *Watersipora subtorquata* in 1963 at an artificial oil island located in State waters. Carlton (2000) states that the origin of this species is offshore the Pacific coast of Asia. In the decades following its first appearance, *Watersipora* has successfully colonized many bays and harbors along the California coast and a few offshore oil and gas platforms and natural reefs located in the Southern California Bight, and it is now found as far north as Yaquina Bay, Oregon. Due to its resistance to copper-based anti-fouling paints, it is commonly found on ship hulls; marine vessel traffic acts as the primary vector for translocating this species to new habitat. In other biogeographic regimes, this bryozoan has been recorded in the waters off Hawaii and in various locations in the Gulf of Mexico and western Atlantic Ocean. Under certain conditions and water depths, *Watersipora* covers virtually 100% of the available substrate and therefore experts recognize that this species has the potential to become quite destructive to native communities. Because it has been found on some oil and gas

platforms located in federal waters, a report released in 2010 by the California Ocean Science Trust identified NIS as a priority information gap needed to evaluate future rigs-to-reefs proposals.

Study findings will also directly benefit state government agencies that have key roles in managing invasive species and those that evaluate or comment on OCS activities (including rigs-to-reefs proposals and marine renewable energy projects) such as the California Department of Fish and Game, State Lands Commission, Coastal Commission and Ocean Protection Council, and the Oregon Department of State Lands and Department of Fish and Wildlife. We expect this study to be awarded through a Cooperative Agreement with a state university or state entity. If applicable, the study will propose a monitoring plan for early detection and response for high-risk areas. Finally, the study will determine if a partial removal option in a rigs-to-reefs proposal affects the risk of NIS establishment to natural habitats.

Objective: The overall objective of this study is to understand the role of offshore structures in managing potential *Watersipora subtorquata* invasions, and to incorporate this information into environmental reviews regarding ongoing operations and decommissioning of oil and gas platforms and potential renewable energy facilities.

Methods: To meet the overall study objectives, three tasks will be performed.

(1) *Quantify the existing distribution and abundance of Watersipora subtorquata.* Scuba divers will use underwater transects and photographic samples to document the relative abundance and geographic and depth distribution of *Watersipora* and other prominent NIS on (a) oil and gas platforms, (b) marine vessels used to service oil and gas platforms, (c) harbors and moorings used by these service vessels, and (d) nearby natural reefs. Voucher specimens that enable species identification and future genetic analyses (if any) will be collected, preserved and archived.

(2) *Document the seasonality of Watersipora settlement at platforms and in harbors.* Over a two-year period, this study will use settlement plates to detail the reproductive seasonality of *Watersipora*. Along with published information on oceanographic currents and seafloor maps, information from tasks 1 and 2 will be used to generate a model of potential vector pathways to and from oil and gas platforms, and identify vulnerable steps in the bryozoan's life history that can be used to manage future colonization risk.

(3) *Assess the effectiveness of mitigation measures that would prevent establishment of Watersipora in uncolonized habitats.* Once the biological data have been collected and synthesized with other available information, the study will evaluate a number of simple mitigation measures that may be employed to manage NIS. Such measures may include (a) adjusting the schedule of either marine vessel hull cleaning or platform maintenance operations that remove biofouling on submerged portions of the jacket so that they coincide with seasons not sensitive to NIS establishment, (b) growth abatement devices, and (c) vector management and other potential actions.

Current Status: SCUBA surveys began in August 2013. Seven platforms have been surveyed to date, with no complications.

Final Report Due: February 2016

Publications Completed: None at this time.

Affiliated WWW Sites: None at this time.

Revised date: September 25, 2013